Shimmer develops and manufactures medical-grade wearable sensors. We partner with scientists to do ground-breaking research and with companies to bring innovative sensing applications to market.
Shimmer Research Products

<table>
<thead>
<tr>
<th>Unit</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shimmer3</td>
<td>9 Degrees of Freedom (DOF) Inertial Sensing</td>
</tr>
<tr>
<td>Shimmer3 GSR+</td>
<td>GSR, PPG and 9DOF Inertial Sensing</td>
</tr>
<tr>
<td>Shimmer3 ECG/EMG</td>
<td>ECG, EMG, Respiration, and 9DOF Inertial Sensing</td>
</tr>
<tr>
<td>Shimmer3 PROTO3</td>
<td>Interface with 3rd party sensors, 9DOF Inertial Sensing</td>
</tr>
<tr>
<td>Shimmer3 Bridge Amplifier+</td>
<td>Load, Weight, Force, Torque and Pressure through 3rd party sensors, Skin Temp, 9DOF Inertial Sensing</td>
</tr>
</tbody>
</table>

Shimmer sensors are designed to be integrated with our ConsensysPRO software which allows for the management of multiple Shimmer sensors simultaneously, live data visualization and a range of advanced data processing features. Shimmer also offers APIs for C#, Java and Android as well as instrument drivers for LabVIEW and MATLAB.

Using Shimmer for the First Time?

Shimmer offers Development Kits, which provide first-time users with all the required equipment and support material to get started working with Shimmer including a dock or base for charging, programming and retrieving stored data from the Shimmer sensors. The docks come with capacity for 1, 6 or 15 Shimmer sensors.
### Technical Specifications

#### TECHNICAL SPECIFICATION KINEMATIC/MOTION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wide Range Accelerometer</td>
<td>STMicro LSM303DLHC</td>
</tr>
<tr>
<td>Range</td>
<td>±2g</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>100 LSB/g at ±2g</td>
</tr>
<tr>
<td>Numeric Resolution</td>
<td>16-Bit</td>
</tr>
<tr>
<td>Typical Operating Current</td>
<td>110 μA (Running Mag @ 7.5 Hz &amp; Accel @ 50Hz)</td>
</tr>
<tr>
<td>RMS Noise*</td>
<td>27.5 x 10⁻⁴ m/s²</td>
</tr>
<tr>
<td>Low Noise Accelerometer</td>
<td>Klonix KXRBS-2042</td>
</tr>
<tr>
<td>Range</td>
<td>±2g</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>600 ±18 mV/g</td>
</tr>
<tr>
<td>Typical Operating Current</td>
<td>500 μA</td>
</tr>
<tr>
<td>RMS Noise*</td>
<td>5.09 x 10⁻⁴ m/s²</td>
</tr>
<tr>
<td>Digital Magnetometer</td>
<td>ST Micro LSM303DLHC</td>
</tr>
<tr>
<td>Range</td>
<td>±1.3, ±1.9, ±2.5, ±4.0, ±4.7, ±5.6, ±8.1μA</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>±100 LSB/Qa at ±1.3</td>
</tr>
<tr>
<td>Numeric Resolution</td>
<td>16-Bit</td>
</tr>
<tr>
<td>RMS Noise*</td>
<td>0.0081 normalised local flux</td>
</tr>
<tr>
<td>Gyroscope</td>
<td>Inversense MPU9150</td>
</tr>
<tr>
<td>Range</td>
<td>±250°, ±500°, ±1000°, ±2000 dps</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>±131 LSB/dps at ±250</td>
</tr>
<tr>
<td>Numeric Resolution</td>
<td>16-Bit</td>
</tr>
<tr>
<td>Typical Operating Current</td>
<td>3.5 mA</td>
</tr>
<tr>
<td>RMS Noise*</td>
<td>0.0481 dps</td>
</tr>
<tr>
<td>Pressure Sensor</td>
<td>Bosch BMP180</td>
</tr>
<tr>
<td>Range</td>
<td>300 - 1100 hPa</td>
</tr>
<tr>
<td>Numeric Resolution</td>
<td>16-Bit</td>
</tr>
<tr>
<td>Typical Operating Current</td>
<td>1 μA at 1Hz</td>
</tr>
<tr>
<td>RMS Noise (standard mode)</td>
<td>0.4 m (from Datasheet)</td>
</tr>
</tbody>
</table>

#### TECHNICAL SPECIFICATION ECG/EMG/ECGmd

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>Software configurable (1, 2, 3, 4, 6, 8, 12)</td>
</tr>
<tr>
<td>Data Range</td>
<td>Software configurable (125 - 8000 SPS)</td>
</tr>
<tr>
<td>Input Differential</td>
<td></td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>Approx 800 mV (for gain = 6)</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>8.4 kHz</td>
</tr>
<tr>
<td>Connections</td>
<td>EMG: Input Ch1N, Input Ch1P, Input Ch2N,</td>
</tr>
<tr>
<td></td>
<td>Input Ch2P Reference, (Ref)</td>
</tr>
<tr>
<td></td>
<td>ECG: Input RA, Input LA, Input LL, Input Vx,</td>
</tr>
<tr>
<td></td>
<td>Reference (RL)</td>
</tr>
<tr>
<td>ECG Unit</td>
<td>Five-wire, four channel ECG solution, measuring</td>
</tr>
<tr>
<td></td>
<td>bipolar limb leads and user's choice of V1-V6</td>
</tr>
<tr>
<td>EMG Unit</td>
<td>2 channels of EMG data, with common reference</td>
</tr>
<tr>
<td>ECGmd Unit</td>
<td>Five-wire, four lead holter monitor electrocardiograph supplied for system integrators</td>
</tr>
</tbody>
</table>

#### TECHNICAL SPECIFICATION GALVANIC SKIN RESPONSE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Consumption</td>
<td>160μA</td>
</tr>
<tr>
<td>Measurement Range</td>
<td>10kΩ - 4.7MΩ (2.5s - 100s) +/- 10%</td>
</tr>
<tr>
<td></td>
<td>22kΩ - 690kΩ (1.5-4.5s) +/- 3%</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>DC-15.9Hz</td>
</tr>
<tr>
<td>Bias Voltage across</td>
<td></td>
</tr>
<tr>
<td>GSR Input</td>
<td>0.5V</td>
</tr>
</tbody>
</table>

#### TECHNICAL SPECIFICATION 200g High Accel IMU

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>±200g (±0.5% linearity up to 180g)</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>~ 6.5 mW/g</td>
</tr>
<tr>
<td>Numeric Resolution</td>
<td>12-bit</td>
</tr>
<tr>
<td>Typical Operating Current</td>
<td>300 μA</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>0.5V</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>1300Hz on X and Y axis, 1000Hz on Z axis</td>
</tr>
</tbody>
</table>

For full technical specification and other product documentation visit the Shimmer website at www.shimmersensing.com
Shimmer Services

Shimmer provides advanced development of wearable sensing systems. We bring your idea from concept to launch, delivering sensing innovations that matter.

What we offer...
Based on award winning clinical grade sensor technology, we provide deep sensing experience and craft sensing systems to bring your innovation to life.

How we offer it...
We offer consultancy, contract and manufacturing services, all the way through to a dedicated development team. This allows for the understanding and insight that accelerates your innovation’s development and reduces your cost to market by up to 80%.